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ABSTRACT

Reading scores earned by 286 fifth-grade pupils taking the California Test of Basic Skills were used in a study examining the relationship between reading achievement and birth order and related family factors. Vocabulary scores were significantly related to birth order, family size, and socioeconomic status. Comprehension scores were significantly related only to family size and socioeconomic status. Sex of the student and the age span between the student and his or her nearest sibling were not related to reading achievement. (AA)

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SOME RELATIONSHIPS BETWEEN BIRTH ORDER, SEX, FAMILY SIZE, SIBLING SPAN, AND READING ACHIEVEMENT

AN ABSTRACT OF A THESIS

SUBMITTED TO THE FACULTY

OF THE GRADUATE SCHOOL OF EDUCATION

OF

RUTGERS

THE STATE UNIVERSITY OF NEW JERSEY

BY

ROSEMARY E. COX GRYGO

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE

OF

MASTER OF EDUCATION

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NEW BRUNSWICK, NEW JERSEY

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ABSTRACT

Birth order and related family factors have long been the subject of studies attempting to provide causes for academic achievement, social, and emotional adjustment. Few investigators, however, have concentrated on relating these factors to reading achievement.

The purpose of this study was to examine the relationship between birth order, sex, family size, SES, sibling age span, and reading achievement. The reading section of the California Test of Basic Skills (CTBS), Expanded Edition, Level 2, Form S was the instrument of measurement used.

Two hundred and eighty-six fifth-grade students from four elementary schools in Edison Township, New Jersey participated in the study. Family-related information was obtained from school enrollment forms. Reading scores were those earned on the CTBS during the regular school testing program in the spring of 1975.

The hypotheses tested in this study were:

1. Early-borns are more likely to get higher reading scores than later-borns.

2. Sex of the subject will be related to reading achievement with girls receiving higher scores than boys.

3. Reading achievement will be related to family size.

4. Reading achievement scores will be related to

the SES of the subject with low SES students scoring lower than high SES subjects.

5. Children with siblings close in age will score lower than children whose age difference between their closest sibling is greater.

The Biomedical Computer Program BMD02D was used to obtain a correlation analysis of the data. This program yielded means, standard deviations, and Pearson product-moment correlation coefficients for each of the variables.

There was a negative correlation between birth order and vocabulary scores on the CTBS indicating that the lower the birth order, the higher the vocabulary score. However, birth order was not significantly related to comprehension scores of the same test.

Sex of the subject was not related to reading achievement. There was no significant difference between the performance of boys and girls on either the vocabulary or comprehension subtests of the CTBS.

A negative correlation was found to exist between family size and reading achievement. Children from small families scored higher than children from large families on both the vocabulary and comprehension subtests.

There was a significant correlation between SES and reading achievement. Low SES students scored lower than high SES students.

Sibling span was not related to reading achievement.

There was no significant difference between the scores of children with close siblings and children with far siblings.

The results obtained in this study may only be applicable to this sample. Different reading measurements, grade levels, and types of samples could be expected to yield different results.

The variables used in this study were global in nature. What is needed is a more exploratory study to find out *why* the relationships revealed in this study exist. A careful control of family variables and their interaction effects on such things as language development and school attitudes could prove to be useful to educators in adjusting learning experiences to fit the needs of individual pupils.

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CHAPTER I

INTRODUCTION

Background of the Problem

Personality theorists have long focused on birth order as a determining factor in the development of an individual's personality. A pioneer in this area is Alfred Adler (1931) who postulated that many first-borns are problem children due to their "dethronement" by the advent of a new baby in the family; that last-borns often become problem children because of their constant striving to catch up to the others; that only children are highly dependent since they have overprotective parents. Recent research in this field has been stimulated by the studies of Schacter (1959) which found that first-borns have a strong need for affiliation in a group and that they are, therefore, more conforming.

Some investigators such as Altus (1965) and Breland (1972) have explored the relationship between birth order and verbal intelligence. First-borns exhibited a tendency to score higher on the verbal components of the Scholastic Aptitude Test (SAT) and the National Merit Scholarship Qualification Test.

Little consideration, however, has been given to a

relationship between birth order and achievement in reading. Success in reading is often assumed to have some dependence on normal emotional development and on verbal ability (Betts, 1957; Dechant, 1970). If this is true and if personality and emotional development and verbal intelligence are related to birth order, then it would seem that a productive area of research would be the study of a relationship between reading achievement and birth order.

Statement of the Problem

The purpose of this study was to determine if the reading achievement of fifth graders was related to their position in their family constellation. Besides birth order, its interaction with sex of subject, family size of subject, socioeconomic status (SES) of subject, and ages of siblings were also investigated. The data were analyzed in order to answer the following questions:

1. Would there be a significant difference between the reading achievement of early-borns and later-borns?

2. Would the sex of the subject be related to reading achievement?

3. Would the family size of the subject be related to reading achievement?

4. Would the SES of the subject be related to reading achievement?

5. Would the ages of siblings be related to reading achievement?

Hypotheses

The hypotheses tested in this study were:

1. Early-borns are more likely to get higher reading scores than later-borns. This hypotheses is based on the work of Altus (1965) which found that first-borns received higher verbal and mathematical scores on the Stanford Achievement Test (SAT). Lending support to this hypothesis also are the findings of Altus (1966) and Schacter (1963) that there is an overpopulation of first-borns among preeminent men.

2. Sex of the subject will be related to reading achievement with girls receiving higher scores than boys. Gates (1961) found that girls obtained higher scores on the Gates Reading Survey Test than boys. He studied the results of tests on 13,000 pupils in grades two through eight.

3. Reading achievement will be related to family size. Nisbet (1953) concluded that the verbal development of children from large families was retarded compared to that of children from small families.

4. Reading achievement scores will be related to the SES of the subject with low SES students scoring lower than high SES subjects. A study by Mayeske, Beaton, Jr., Cohen, Okada, and Wisler (1973) for the U. S. Office of Education found that students with a low SES were less motivated and showed less achievement in school.

5. Children with siblings close in age will score lower than children whose age difference between their closest sibling is greater. Lending credence to this hypothesis is the study by Breland (1972) which found that children with siblings close in age scored lower on the 1962 National Merit Scholarship Qualifying Test than those with far siblings.

Importance of the Study

Identification of family background factors which influence reading achievement is an area of research which has not been thoroughly examined. It is hoped that this study will provide some new insights into the relationships and interaction between birth order, family structure, SES, and reading achievement. Theoretical and practical applications should be a product of this knowledge.

Theoretically, these findings can help to close an existing gap in our knowledge about influences on reading achievement. Practically, findings could be used as additional predictive variables resulting in some preventive measures being taken before reading problems occur in specific children. By examining the results of this study, it will be possible to determine what SES and family structure variables are most related to reading achievement for this sample. Children whose family structure and SES are different from those found to be related to reading achievement could be provided with models and experiences

which are existent for the children whose reading achievement is high.

Definition of Terms

Reading Achievement

In this study, reading achievement is defined as the stanine score on the vocabulary and comprehension subtests of the California Test of Basic Skills (CTBS), Expanded Edition, Level 2, Form S, administered during the regular school testing program in March, 1975.

Socioeconomic Status (SES)

SES is defined by the parental occupation level obtained on the scale devised by Otis Dudley Duncan (Reiss, 1961).

Birth Order

Birth order refers to the numerical position held by the subject in his or her family--number 1 designating the oldest child in the family; number 2, the next oldest and so on.

Sibling Span

Sibling span is defined as the number of years' difference between the subject and the sibling nearest in age. It was not recorded whether this sibling was older or younger than the subject.

Limitations of the Study

One of the main limitations of this study was the inability to obtain firsthand information about the family structure and parental occupations of the subjects. With the passage of the Buckley Amendment which limits access to school records and the increasing concern of parents regarding the divulging of personal information, school districts are becoming more cautious about allowing those conducting studies to inspect records and question children.

Permission to distribute a questionnaire on the number and ages of siblings was denied to this examiner on the basis of possible parental objection. However, the Edison Township Board of Education exercised its right to waive the Buckley Amendment in order to allow this examiner to inspect enrollment forms in the cumulative folders of the subjects. These forms contain the occupation of parents and the names and ages of siblings at the time of the subjects' enrollment in kindergarten six years ago.

The accuracy of the data is therefore limited in that the information is not up-to-date and school records are often incomplete. It was assumed, however, that the occupational level would not change significantly in six years and that it would be sufficient to know the number and ages of the siblings older than the subject and the number and ages of siblings born by the time the subject

had reached the enrollment age of five years. This would provide accurate birth order information since children born after the subjects' enrollment would not change the already established family position of the subject. In most cases, sibling span information would be accurate since all siblings born before the subject and all siblings born by the time the subject reached enrollment age would be listed.

The way in which reading achievement is defined differs throughout the literature. This investigator used stanine scores on the California Test of Basic Skills. Other studies use different tests, school grades, participation in remedial reading classes as criteria; and this could mean that different results might be obtained.

Another variable which is defined in different ways is SES. This study used the occupational level scale devised by Otis Dudley Duncan (Reiss, 1961). Variant results could be produced through the use of other measures of SES as educational level or income level.

Conclusions drawn may only be applicable to the grade level used. Perhaps a replication of this study on a different grade level would yield different results.

Intelligence test scores would have been desirable. However, they were not available to this investigator.

Since the purpose of the study was to determine <u>if</u> birth order, sex of subject, family, sibling span, and SES

of subject are related to reading achievement, no attempt was made to find out why these variables are related. Causal explanations were left to future research. However, possible explanations for the relation of these variables to reading achievement based on pertinent research were offered.

CHAPTER II

REVIEW OF THE LITERATURE

Overview

The investigators of birth order explore its relationship to many factors--personality, leadership, need for affiliation, eminence. This study is concerned with the existence of a relationship between birth order and reading achievement, while the interacting factors of sex, family size, SES, and siblings will also be examined.

This chapter contains background on the leading theorists who are credited with stimulating present birth order research. Recent birth order research and its relation to achievement will be included in another section of the chapter. Because of the interrelatedness of other variables, there is a problem of overlapping information. For clarity, the variables of sex differences, family size, SES, and siblings and how they relate to achievement are dealt with separately to provide a more readable format.

Forerunners of Present Birth Order Research

Research on birth order and its effects dates back a whole century since Galton (1874) studied the relation between birth order and eminence. The pioneer in the area

of classifying human beings into behavioral categories according to order of birth is generally recognized to be Adler (1931).

Adler's explorations into the subject of birth order are directly related to his psychological assumption that every human being strives to compensate for inferiority feelings by seeking power. By examining the psychology of the last-born, the first-born, the second-born, and the only child, Adler (1931) describes the inferiority feelings peculiar to each ordinal position and how the position a child occupies in his family constellation influences his attitudes towards life and determines the direction his personality is going to take.

In describing the last-born child, Adler's treatment is particularly solicitous. Being the youngest and smallest, he is most in need of help which he elicits from his more independent older siblings. Viewed as an object of weakness, the youngest child usually develops feelings of inferiority. His handling of these feelings produces remarkably different characteristics.

One type of youngest child, tired of being the smallest and least trusted, tries to excel all others and overcome all obstacles. He often becomes the most capable member of the family. However, he often values competition for itself and is willing to attain his ends at the cost of others.

Another type of youngest child, while desiring to excel, does not have the self-confidence to pursue his abilities. Fearing the lack of ability to surpass his older siblings, he avoids competitive situations, finds excuses for his failures, and generally becomes oppressed with his feelings of inferiority.

Adler describes the advantages of being the oldest child. Historically, the oldest son has always held a particularly favorable position. All oldest children are entrusted with more responsibility by virtue of the fact that they are the oldest and strongest. This fosters in them a high regard for power, both personal and in general.

In discussing the reasons for a first-born's feelings of inferiority, Adler (1931) says that they stem from his being "dethroned" as the only child when a second child is born. If prepared for the birth of a second child, no adverse reaction will occur; if not, the oldest will feel envious of the younger and will always fear the taking away of his power by others. Adler feels that there are more problem children among oldest children than among any other group.

The second-born also strives toward power. He is motivated by the one ahead of him. He feels a great deal of pressure and compulsion to overtake the first-born. The second-born often places his goals too high and suffers from living in a fantasy world.

Adler's view of only children is particularly negative. He describes the only child as being highly dependent, that is, constantly needing support and wanting to be shown the way. Pampered and the center of attention, he often overestimates his value. His parents' inordinate amount of caution in regard to health and external difficulties results in a useless life. He becomes "a parasite who does nothing, but enjoys life while the rest of the world cares for his wants" (1931, p. 155).

Adler dismisses theories on the inheritance of traits as valueless. He feels that the position the child holds in the family is the chief determinant of his traits.

Until recently, the theory of ordinal position has been the subject of very little research. With the publication of a book by Schacter (1959) which consisted of several studies on ordinal position, motivation, and behavior, much research using ordinal position as a variable has been stimulated.

Schacter (1959), positing a need for affiliation, stated that this need is stronger in first-born children. He explains this finding by arguing that the arrival of a second child in a family causes the first-born to become anxious and to suffer a loss of self-esteem. This results in the first born seeking approval, attention, and support from others. He achieves this through some form of social interaction such as joining a group. In order to be an approved member of a group, the member must occasionally

conform to the norms of the group. This is why Schacter says that first-borns are more prone to be influenced by others and are more conforming.

Other relations between birth order and later-life behavior patterns were demonstrated in many interesting field and laboratory studies by Schacter (1959). He found, for example, that first-borns became more anxious than later-borns when placed in a stress situation. Anxious first-borns preferred the company of others more than did anxious later-borns.

Another behavior characteristic which is influenced by family position is dependency. From a study on nursery school children, Schacter (1959) concluded that first-born children were more dependent on their teacher than later-born children.

Birth Order and Achievement

Numerous studies have related academic achievement to the child's order of birth in the family. Several of these studies dealing with the overrepresentation of first-borns in the college population date back to the 1920s. Bender (1928) found a preponderance of first-borns in Dartmouth at that time. More recently, Schacter (1963) and Sampson (1965) found a disproportionately high number of first-borns in college populations. These students had higher grade point averages. Altus (1965) gathered data on the birth order of students entering the University of

California, Santa Barbara from 1960 to 1963. He found that more than 60% of the entering students were first-born. Of two-child families, 63% were first-born; of three-child families, 51%; of four-child families, 50%. A replication of this study was conducted by Walker and Tahmisian (1967) who confirmed the results of Altus that there is a disproportionately high number of first-borns at the college level.

Another measure of achievement is performance on the National Merit Scholarship Qualifying Test (NMSQT). Nichols (1964) shows that of 1,618 students who obtained exceptionally high scores on the NMSQT, a higher percentage than expected by chance were first-borns. Nearly 60% of these students who came from families of two to five children were first-borns. Breland (1972) also found that first-borns score higher on the verbal components of the NMSQT.

Grades in school constitute another measure of achievement. As was reported before, Schacter (1963) and Sampson (1965) found that first-borns obtain higher grade point averages than later-borns. Jones (1965) found that first-born students in a two-child family are 20% more likely to receive A's and B's than students who were second-born in such families. Students who were the oldest in families of three or more were 50% more apt to receive A's and B's than middle or younger children in the same

families. Bradley (1968), however, states that evidence favoring first-borns in school achievement is inconclusive. While it is clear that first-borns go to college more often, there is no evidence that their performance is better.

There is limited evidence that first-borns excel in reading. Early studies by Anderson and Kelley (1931) and by Bennett (1938) reveal that in studying groups of good readers and groups of poor readers, more first-borns were found in the groups of good readers than in the groups of poor readers. More recently, Otto (1965) studied samples of 300 good readers and 300 poor readers to determine if statistical significance could be obtained favoring the only and the eldest child in the good reader group. High statistical significance was found supporting the contention that more only and eldest children would be found in the good-reader group.

It should be noted that in most of the studies mentioned, there is little or no control for SES. Perhaps the inclusion of this variable would have altered some of the results.

Sex Differences in Reading Achievement

Research reports on sex differences in reading achievement generally indicate that boys tend to lag behind girls--especially in the early grades. Wyatt (1966) noted that 75 to 90% of the children in remedial reading classes

are boys. Similarly, Weintraub (1966) observed that a higher proportion of boys are found among poor students, repeaters, and dropouts.

Anderson, Hughes, and Dixon (1956) conducted a study at the University of Michigan Elementary School where children started reading as they indicated they were ready rather than at a universally prescribed time. Subjects included 142 boys and 175 girls. A child who achieved a reading age of 84 months on the Gates Primary was considered to have learned to read. It was found that girls, on the average, learned to read more than six months earlier than boys; and there were fewer extreme delays in reading among the girls. Only about 1/3 of the boys learned to read at the normal first-grade age. The results cannot be construed as representative of the entire school population since the children were of above-average intelligence and a permissive method of instruction was used.

In another study at the University of Michigan Elementary School, Anderson, Hughes, and Dixon (1957) found that sex differences were much less pronounced in children of high intelligence. When reporting results for the entire group of subjects which consisted of 107 boys and 102 girls, no significant sex differences were shown in rate of reading development. When the children were separated into three different IQ groups, it was reported that in children of high ability, sex differences in the age of

learning to read tended to disappear. In the lower ability group, boys started later than girls but developed more rapidly.

Of those involved in the first-grade studies sponsored by the U. S. Office of Education, Spache, Andres, Curtis, Rowland, and Fields (1966) obtained results which confirmed those of Anderson et al. (1957) that while girls are favored in reading achievement, sex differences are overcome at the upper levels of ability.

Gates (1961) supplied evidence that girls excel throughout the elementary grades. In studying the results of more than 13,000 students in grades two through eight who had taken all three forms of the Gates Reading Survey Tests, he found that girls achieved higher mean raw scores throughout the grades; that there was a greater variability of boys' abilities; that there was a predominance of boys at the bottom of each grade group. Most of the differences were statistically significant.

The purpose of a project undertaken by Stanchfield (1962) in the Los Angeles City Schools was to determine if beginning reading achievement of boys would be affected by grouping them only with boys. Five hundred and fifty first-grade children took part in the study. By the end of the first grade, it was found that no statistical difference in reading achievement occurred between the boys taught alone and the boys taught with girls. The girls achieved

significantly more than the boys.

Teachers involved in the study found that the learning behavior of first-grade boys differed basically from that of first-grade girls. For example, boys were found to be more fidgety, less fluent, less able to make auditory discriminations, less motivated to learn and to please the teachers. Their attention span was shorter than that of the girls and their listening skills not as developed. In order for the boys to be interested in reading materials, the subject matter had to be more exciting and unusual than that required by the girls.

A new approach to the study was taken in the second year. Materials designed to interest boys were used with experimental groups of boys and girls while control groups used basal texts. While the boys in the experimental groups did achieve more in reading than boys in the control groups, the difference was not significant.

Stanchfield continued analyzing and testing boys' reading materials. During the years 1965-1967, she developed basal readers containing lively stories geared to the interests of boys. Significant results were obtained when these basals were compared with the basal series used by the state of California.

While most of the sex difference studies are concerned with primary children, an important study on children in grades three through eight was conducted by Stroud

and Lindquist (1942). Over 50,000 pupils in Iowa schools were administered the Iowa Every-Pupil Basic Skills Test. The mean difference in reading comprehension scores, while favoring girls, declined significantly at grade six.

Causal explanations offered for sex differences in reading achievement are often environmental and cultural in addition to maturational factors cited above. Because of the fact that the majority of teachers in elementary schools are female and that certain expected behaviors result from this, Silberman (1971) describes present-day schools as feminine institutions. Positive reinforcement is given to the more passive and quiet behavior typical of girls, while disapproval is given to the more aggressive behavior of boys.

Preston (1962) contrasted the reading achievement of American and German children in the fourth and sixth grades. In the American group, the girls were superior on mean reading scores and showed less variability than boys. The findings in Germany were just the reverse of those in America with the boys receiving the superior scores. An explanation often given for these findings is that in Germany the teachers are predominately male.

Another investigator who addressed himself to cross-cultural sex differences in reading was Johnson (1973). He studied sex differences in reading ability among elementary school students in the four English-speaking nations of

Canada, England, Nigeria, and the United States. He designed the study to avoid confounding the findings with the factor of different languages present in the study by Preston (1962).

The sample from each country approximated 100 children from grade levels two, four, and six. The Gates-MacGinitie Tests were used to test comprehension and vocabulary. Phonics knowledge was tested through the use of four subtests of the Wisconsin Design Word Attack Battery. Tests were administered between May and July, 1971.

In England and Nigeria, the boys scored better than the girls on about 2/3 of the 18 within-country mean score comparisons. In contrast, the girls in the United States and Canada scored better than the boys on 3/4 or more of the mean score comparisons.

Johnson (1973) concluded, therefore, that sex differences in reading are culturally determined. He noted that there are proportionately more female teachers than male in Canada and the United States while in England and Nigeria there are more male teachers. It was the opinion of Johnson (1973) that schooling and reading ability are relatively more valued for boys than girls in Nigeria and England than in Canada and the United States.

A cultural explanation frequently proposed is that in our American society, reading is a more acceptable activity for little girls, while boys are encouraged more to

participate in physical activities such as sports (Dechant, 1970; Johnson, 1973).

An extensive review of studies on sex differences in reading was conducted by Heilman (1961) who stresses the need to treat as comparable only those studies which measure the same age groups, use the same statistical procedures and have comparable measuring instruments. He does conclude that the literature points to a real sex difference in reading at least in the primary grades. The following are the more frequently mentioned hypotheses regarding this conclusion which he presents for consideration:

1. Boys and girls at certain ages differ in "intelligence."
2. Boys and girls mature at different rates and some phases of growth are closely related to reading.
3. The school environment and curriculum at the primary level are more frustrating to boys than to girls.
4. Basal reader materials are less motivating and satisfying to boys than to girls.
5. Most primary teachers are women.
6. Boys are less motivated to learn to read.

(pp. 408-412)

Family Size and Achievement

Family life incorporates complex variables of critical importance in educational achievement. One variable is family size which in itself appears to affect school achievement. Nisbet (1953) hypothesized that the larger the size of the family, the lower intelligence scores would be. He suggests that a negative correlation between family size and intelligence test scores is caused by the limiting

of mental development which is associated with an environmentally caused lack of verbal ability. The restricted contact with adults results in reduced opportunities to acquire mature habits of speech and thought. These artifacts of life in a large family are disadvantages which are revealed in test performances of children. It was not suggested that the negative correlation of family size and intelligence scores be attributed only to the environmental influence of family size on verbal development but that this factor should account for part of the negative correlation.

Nisbet (1953) used different tests, age groups, and ranges of verbal ability to test his hypothesis. Although his predictions were substantiated under all conditions, it did not mean that there could not be other explanations of the results. But he did conclude that part of the negative correlation between family size and intelligence scores was caused by the detrimental effect a large family had on a child's verbal development due to lessened contacts between the parent and child.

There is some overlapping of the family size variable with SES. Middle-class families tend to be smaller than lower-class families, and middle-class children tend to receive higher intelligence scores. It was noted by Pahl (1970) that smaller families produce higher intelligence scores. He postulated that the home factors in these

families led to higher intelligence and more favorable attitudes toward education.

Breland (1972) found that the family size effect was independent of SES and theorized that large-family children had lower achievement because of less interaction with parents.

Sibling Age and Achievement

One of the few studies to examine sibling age in relation to achievement was that by Breland (1972). Examined were the test scores of two samples of National Merit Scholarship participants tested in 1962 and almost the entire population of those tested in 1965. Among data submitted was information on family size and ordinal position. Where the spacing of siblings was far (three or more years), the mean scores for second-borns and third-borns were above the average. Where the second-born followed his preceding sibling closely (one or two years), the mean scores were lower. Breland theorized that close siblings do not have the opportunity for close one-to-one interaction with parents.

Chittendon, Foran, and Zweil (1968), in studying the achievement of first- and second-borns, discovered that a relationship may exist between age span differences of first- and second-borns and the superiority of the first-borns. Achievement data came from common grade levels for pairs of first- and second-born siblings. The data

indicated that first-born superiority may be more pronounced for siblings close in age.

To discover the relationship between family factors and certain aspects of adjustment, Damrin (1949) tested 156 girls in grades 9 through 12. School grades were used to determine academic achievement. When the subjects were grouped according to the number of years between their nearest-age sibling, a slight but steady increase in academic achievement accompanied an increase in years separated. The findings, however, were not significant.

SES and Achievement

The literature on SES suggests that family background is a crucial achievement factor in achievement. The family shapes the child's attitudes toward school and learning. Economic status has been seen to have a direct influence on what these attitudes are. Middle-class families convey to their children that achievement in school is necessary for higher education and future financial success. These long-range goals are realistic to the middle-class child but unrealistic to the lower-class child whose unpredictable existence must of necessity force him to focus on immediate problems. In the lower-class home, little value is placed on academic work which often the parent has difficulty comprehending. The lower-class parent is judged to be less interested in and often negative toward school policy (Corwin, 1965; Herriott & St. John,

1966; Litwak & Meyer, 1974).

Corwin (1965) added that reward and punishment systems differ for lower-class and middle-class children. School rewards are more relevant for the middle-class child who fears bad grades. The lower-class child has more fear of being called "teacher's pet."

Different experiential backgrounds of children account for differences in reading achievement. As Dechant (1970) points out, a child's potential for concepts is increased if he has had experiences with books and magazines and if he has had the opportunity to make trips and to hear good language. This breadth of experience enables a child to bring meaning to the printed page, thereby increasing reading ability and achievement. Middle-class families are more apt to be able to afford and provide these experiences for their children.

Language differences occur between the social classes. The teaching styles of mothers have been studied to discover patterns of differences in language development and learning styles. Hess, Shipman, and Jackson (1965) found that middle-class mothers used a larger quantity of words and more complex sentences in talking with their children. The language structure used by middle-class mothers more closely resembles that of the schools, thereby increasing the chance of success for middle-class children.

Strang (1951) also hypothesized that inappropriate

speech habits are the result of a cultural background devoid of broadening experiences. This is thought to lead to a retardation of social and academic progress.

Parents are the first educators of children providing stimulation and experiences for learning. Both teaching and motivational functions are performed by them. Reading to the child and praise for academic achievement were two examples of teaching and motivation found by Mayeske et al. (1973) to be related to school performance. In the middle-class home, the mother usually has more time to read to the child; and academic achievement is more likely to be praised.

While testing for sex differences in verbal ability of low SES groups, Edmonds (1964) administered the Cooperative School and College Ability Test to 1,239 pupils in the 11th grade. The verbal ability scores were tested for significance of differences between the sexes and also for differences between like-sexed groups of different SES levels. No significant sex differences were found in the low SES group or in the high SES group suggesting that there may be no significant difference between boys and girls when SES is held constant. Edmonds found that boys of high SES received significantly higher scores than boys of low SES, and girls of high SES received significantly higher scores than girls of low SES. He concluded that sex is not a valid predictor of verbal ability while SES

is.

Another examination of the difference between children of high and low SES groups was conducted by Worley and Story (1967). Forty students between the ages of 5 years 11 months and 6 years and 11 months were administered the Illinois Test of Psycholinguistic Ability. Half the students were from a high SES level and the other half from a low SES level. The mean score for the low SES group was 5 years 11 months, while the mean score for the high SES group was 7 years 1 month. The difference in language facility was significant. The examiners observed that there was a difference in attitude between the groups. The children from the high SES group were more interested and curious about the testing situation indicating to the examiners that the high SES group placed more value on things of an academic nature. It should be noted, however, that the sample for the study was small in number.

In the comprehensive study sponsored by the U. S. Office of Education, Mayeske et al. (1973) analyzed student achievement as it related to family background, SES, schools, and attitudes toward education. Some 650,000 students in 4,000 schools throughout the country, along with their teachers, principals, and superintendents, were tested and surveyed. Tests were administered in reading comprehension, mathematical ability, general knowledge, and ability. A relationship between achievement and SES was

found to exist. This relationship was greater for whites than for other groups.

The existence of a school attitude was also found. When a school has a population of homogeneous SES, a particular climate can be found there. The learning expectations of the school reflects the expectation of its SES group. Mayeske et al. (1973) found that there is a tendency for students with the same SES to go to school together. In addition, the achievement and motivational levels of fellow students play a great role in achievement because of an "aggregate effect."

Summary

To summarize the review of the literature, it has generally been found that birth order favoring first-borns has an effect on achievement. This is seen mainly in the disproportionately high number of first-borns in colleges and universities.

In general, girls tend to attain higher levels of achievement in reading than boys. This is especially true at the beginning reading stage. Maturational, environmental, and cultural factors contribute to this phenomenon.

Family size is inversely related to achievement. The lessened contact a child from a large family has with his parents is seen as a contributing factor to a lower degree of verbal ability and a resulting lower level of achievement.

Far siblings achieve higher than near siblings. This may be due to the greater opportunity a far sibling has for one-to-one interaction with parents.

High SES children have more of a chance for success because of family background and the attitude of schools. Parental and teacher expectations and experiential backgrounds of high SES children are conducive to higher achievement.

There are a few studies relating an early birth order position to higher reading achievement. However, no study could be located that has as its subject the relationship between birth order, sex, family size, sibling span, and reading achievement.

CHAPTER III

PROCEDURE

Subjects

Subjects for the study were 286 fifth-grade students from four elementary schools in Edison Township, New Jersey. Since all fifth-grade pupils in the four elementary schools selected served as subjects, an attempt was made to select schools which would provide a representative sample of students from various SES levels. The four schools chosen furnished a mixture of socioeconomic levels ranging from unskilled, blue-collar workers to professional white-collar workers.

Collection of Data

Data from the enrollment records supplied age and sex of student, number and ages of siblings, and occupational status of parents. The listing of siblings and their birth dates made it possible to obtain information on the birth order of the subject, the size of his family, and the number of years between the subject and his nearest sibling. It should be noted that the size of the family refers to the number of children in the family.

An SES level was assigned according to parental occupation based on the socioeconomic index designed by Otis

Dudley Duncan (Reiss, 1961). A scale rating for each occupation ranged from 1 to 96. In cases where both parents were employed, the occupation receiving the higher scale rating was used.

The measurement of reading achievement was obtained from the computer printouts provided by the Comprehensive Test of Basic Skills scoring service. Vocabulary and comprehension scores from the CTBS were reported in national and local stanines. Local stanines would be expected to correlate highly with national stanines but were reported only as a means of comparing the local population with the nation as a whole.

Instrumentation

The March, 1975 administration of the Comprehensive Test of Basic Skills (CTBS), Expanded Edition, Level 2, Form S was a part of the regular school testing program. Tests were administered by the classroom teachers with whom the children were familiar. The reading skills area of the CTBS is comprised of two subtests: vocabulary and comprehension. The stanine scores on the vocabulary and comprehension subtests obtained by the subjects were used to assess reading achievement.

The vocabulary test of the CTBS takes 14 minutes to administer and consists of 40 underlined stimulus words in a phrase and four choices from which to choose a synonym for the underlined stimulus word.

The comprehension test takes 35 minutes to administer and consists of several paragraphs about which 45 comprehension questions are asked. Such components of comprehension as literal recall, rewording, context clues, main idea, descriptive words, and conclusions are tapped.

The publishers report Kuder-Richardson formula 20 correlation coefficients ranging from .85 to .95 for the two reading subtests. While there is a lack of criterion-related validity data, close attention is paid to content validity. This data consists mainly of classroom teacher and curriculum specialist judgments as to test items used, followed up by content specialist reviews. Flexibility of choice of level to be used is provided by seven overlapping levels. Normative data is derived from a stratified random sample drawn from public and parochial schools within the 50 states comprising approximately 150,000 students in grades K through 12.

Reviewers in Buros (1972) state good internal consistency and good construction.

Treatment of the Data

The data from test scores and school records were coded and transferred to IBM coding sheets. The data on each of the 286 subjects were punched on IBM cards and submitted to computer processing at the Center for Computer and Information Services Department at Rutgers University.

The Biomedical Computer Program BMD02D was used to

analyze the data. This program provides the means, standard deviations, and Pearson product-moment correlation coefficients for each of the variables.

CHAPTER IV

RESULTS OF THE STUDY

The Biomedical Computer Program BMD02D was used to obtain means, standard deviations, and Pearson product-moment correlation coefficients for each of the variables. The four schools used in the study were first looked at separately in order to determine if there were appreciable differences between schools. A comparison of the number of cases for each of the four schools and the means and standard deviations of the SES index of each school was made by the use of a t test of significance. Since this analysis revealed no differences, the four schools were combined and treated as one sample of 286 cases.

Table 1 shows the range, the means, and standard deviations on the nine variables for the total population of 286 fifth graders.

With a range of 1 to 12, the mean order of birth for the group as a whole was 2.4. Since boys were assigned the number 1 and girls the number 2, a mean of 1.5 for the sex variable indicates there were approximately the same number of boys as girls in the study. With a range of 1 to 15, the mean family size was 3 children. In this study, sibling span ranged from 1 to 20 years with an average of 2.8

TABLE 1

MEANS AND STANDARD DEVIATIONS OF VARIABLES USED IN STUDY (N = 286)

	Variable	Range	Mean	Standard Deviation
1.	Birth Order	1-12	2.4	1.5
2.	Sex	1-2	1.5	.5
3.	Family Size	1-15	3.0	1.5
4.	SES	2-93	44.1	23.8
5.	Sibling Span	1-20	2.8	2.5
6.	CTBS--Vocab. Nat'l Stan.	1-9	5.6	1.6
7.	CTBS--Comp. Nat'l Stan.	1-9	5.4	1.8
8.	CTBS--Vocab. Local Stan.	1-9	5.0	1.9
9.	CTBS--Comp. Local Stan.	1-9	5.0	1.9

years between the subject and his nearest sibling. A mean SES index of 44.1 out of a possible 2 to 93 was also reported. The mean national stanine for the vocabulary section of the CTBS was 5.6; while for the comprehension section, it was 5.4. Local stanines were slightly lower demonstrating that the local population from which the subjects were drawn scored higher than the national population. Stanines ranged from 1 to 9.

The correlation matrix in Table 2 shows that the results of this study differ in some areas from the general

TABLE 2

CORRELATIONS* BETWEEN FAMILY, SES, AND READING VARIABLES
(N = 286)

	1	2	3	4	5	6	7	8	9
1. Birth Order	1.00	.00	.82**	-.06	.18**	-.16**	-.08	-.16**	-.10
2. Sex		1.00	.00	-.02	.05	.03	.03	.05	.04
3. Family Size			1.00	-.06	.01	-.19**	-.12*	-.20**	-.14**
4. SES				1.00	-.11*	.34**	.29**	.34**	.29**
5. Sibling Span					1.00	.04	.05	.06	.04
6. CTBS--Vocabulary Nat'l Stanine						1.00	.80**	.97**	.81**
7. CTBS--Comprehension Nat'l Stanine							1.00	.80**	.97**
8. CTBS--Vocabulary Local Stanine								1.00	.81**
9. CTBS--Comprehension Local Stanine									1.00

*Correlation of .11 needed for .05 level of confidence.

**Correlation of .14 needed for .01 level of confidence.

findings of many studies mentioned in the Review of the Literature.

Hypotheses

Hypothesis 1: The Relationship Between Birth Order and Reading Achievement

The first hypothesis--early-borns are more likely to obtain higher reading scores than later-borns--was partially supported. Table 2 demonstrates that there was a negative correlation between birth order and vocabulary scores indicating that the lower the birth order, the higher the vocabulary score. This was significant at the .01 level. However, there was no significant correlation between birth order and comprehension scores.

Hypothesis 2: The Relationship Between Sex and Reading Achievement

The second hypothesis--girls will receive higher reading scores than boys--was not supported. There was no significant difference between the performance of boys and girls on either the vocabulary or comprehension subtests of the CTBS.

Hypothesis 3: The Relationship Between Family Size and Reading Achievement

The third hypothesis--children from small families will score higher than children from large families--was supported. Table 2 shows a negative correlation between

family size and vocabulary and comprehension scores. The correlation was significant at the .01 level for vocabulary scores and at the .05 level for the national comprehension score.

Hypothesis 4: The Relationship Between SES and Reading Achievement

The fourth hypothesis--low SES students will score lower than high SES students--was supported. A significant correlation well beyond the .01 level was found to exist between SES and all reading achievement scores.

Another interesting but unexpected negative correlation was discovered between SES and sibling. It was revealed that the higher the SES, the smaller the span between siblings. This was significant at the .05 level.

Hypothesis 5: The Relationship Between Sibling Span and Reading Achievement

The fifth hypothesis--children with siblings close in age will score lower than children whose age difference between their closest sibling is greater--was not supported. Table 2 shows no correlation between sibling span and reading achievement.

CHAPTER V

SUMMARY, DISCUSSION, AND CONCLUSIONS

Summary

The purpose of this chapter will be to discuss the results of the study and to offer possible explanations for the results while attempting to relate the explanations to the literature.

The questions asked in this study were:

1. Would there be a significant difference between the reading achievement of early-borns and later-borns?

2. Would the sex of the subject have an effect on reading achievement?

3. Would the family of the subject have an effect on reading achievement?

4. Would the SES of the subject have an effect on reading achievement?

5. Would the ages of siblings have an effect on reading achievement?

Two hundred and eighty-six fifth-grade students from four schools in Edison Township, New Jersey in the spring of 1975 participated in the study. Data collected included family, SES, and reading achievement information.

Discussion

The Relationship Between Birth Order and Reading Achievement

An analysis of the results of this study revealed that birth order is significantly related to vocabulary scores of the CTBS but not significantly related to comprehension scores of the same test.

It is difficult to relate this study to other birth order studies since age levels, measuring instruments, and units of measurement are all different. However, most studies did attest to a general superiority of only and early-born children in academic endeavors.

Studies which have cited the preeminence and overrepresentation of first-borns in college include those by Altus (1965), Schacter (1963), and Sampson (1965). Studies limited to examining birth order and reading achievement are few. Otto (1965) found significantly more only and eldest children in a group of "good readers" compared to those categorized as "poor readers."

The present findings are in general agreement with the aforementioned studies in that early-born children received significantly higher scores on the vocabulary subtest of the CTBS and showed a tendency toward higher scores on the comprehension subtest of the CTBS. This would indicate that early-born children in this sample are superior at least in vocabulary at this age level.

Some factors which may account for the lack of

significant differences in comprehension include growing emphasis on comprehension skills at the intermediate level, individualization of instruction, and early identification and remediation of comprehension deficiencies by the reading specialists in Edison Township.

The Effect of Sex on Reading Achievement

One of the primary findings of this study was that sex differences in reading achievement were not evident. There were no significant differences between the mean stanine score of girls and the mean stanine score of the boys on either the vocabulary or comprehension subtests of the CTBS.

The present findings are not in agreement with those researchers (Anderson et al., 1956; Gates, 1961; Spache, 1966) who assert that girls are favored in reading achievement. However, it should be noted that those studies dealt with first-grade children.

This study supports the findings of Stroud and Lindquist (1942) who found that sex differences in reading achievement decline significantly at grade six. The present fifth-grade sample has apparently overcome any sex differences which might have been present when they were first graders.

Contributing to the lack of sex differences in this study could be the following factors: early identification

and remediation of reading problems, an emphasis on individualization of instruction in the Edison schools, the overcoming of the maturational lag of boys at this level.

The Effect of Family Size on Reading Achievement

Another of the findings of this study was that there is a negative correlation between family size and reading achievement. Children from small families achieved higher mean stanine scores in vocabulary and comprehension than children from large families. This is in agreement with Breland (1972) and could be related to the findings of Nisbet (1961) and Pahl (1970) who found evidence that children from smaller families have higher intelligence.

It is generally agreed that children from smaller families have more interaction with their parents. This could further their mental and verbal development and be a reason for greater achievement. In addition, families with fewer children are able to spend more money on educational toys and books and are better able to take trips which have educational value.

The Relation Between SES and Reading Achievement

This investigator found a modest correlation between SES and reading achievement. The higher the SES, the higher was the achievement in both the vocabulary and comprehension subtests. Similar findings were demonstrated

by Edmonds (1964) and Mayeske et al. (1973).

Explanations offered for such findings include those by Corwin (1965), Dechant (1970), Strang (1951), and Hess et al. (1965). Corwin (1965) contends that middle-class families place more value on academic work. Dechant (1970) cites the increased likelihood that middle-class parents can provide broadening experiences which in turn will help their children to read better. Strang (1951) and Hess et al. (1965) refer to the role of language structure and speech habits. They feel that the language structure and speech habits of middle-class parents more closely resemble that of the schools and, therefore, foster academic progress.

The Relation Between Sibling Span and Reading Achievement

Results of this study are that there is no correlation between sibling span and reading achievement. This is contrary to the findings of Damrin (1949) and Breland (1972) who discovered that the achievement of children with close siblings was lower than that of children with far siblings.

This finding of the present study could be related to another phenomenon which was detected in the study. In this sample, the sibling span was smaller among high SES subjects. The effect of high SES could negate the effect of near siblings.

Conclusions

This study led the writer to conclude the following:

1. Birth order is significantly related to the CTBS vocabulary scores of fifth-grade boys and girls from Edison Township.

2. The sex of the subject is not related to reading achievement.

3. Family size is significantly related to reading achievement with children of small families scoring higher than children of large families.

4. SES has a significant relationship to reading achievement with children from high SES scoring higher than children from low SES.

5. Sibling span is not related to reading achievement.

Suggestions for Further Research

Although numerous studies relating birth order and achievement have been done, few have concentrated on birth order and reading achievement. More studies using other reading measurements should be undertaken in order to define specific reading skills which are related to family variables.

A thorough examination of the many aspects of family structure would be most beneficial. The variables used in this study were global in nature. What is needed is a more

exploratory study to find out why the relationships revealed in this study exist. For example, it would be interesting to know what there is about being first-born which is conducive to a higher level of achievement; what conditions present in homes of high SES and few children contribute most to high achievement. A careful control of family variables and their interaction effects on such things as language development and school attitudes could prove to be useful to educators in adjusting learning experiences to fit the needs of individual pupils.

The sample in this study was predominantly white, middle-class American. Different insights as well as effects could be expected from a study which examined cultural differences in family patterns.

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APPENDIX

BACKGROUND DATA ON SUBJECTS

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
001	1	2	2	2	Newspaper editor	82	1	5	6	5	6
002	1	3	1	3	Advertising agent	66	4	7	7	7	7
003	1	2	2	4	Cook	15	1	6	5	5	5
004	1	2	1	3	Truck driver	15	1	5	7	4	7
005	1	2	2	2	Shipping clerk	22	10	7	6	7	6
006	1	1	1	1	Dispatcher	40	0	5	3	4	2
007	1	3	1	3	Carpenter	19	2	6	8	6	7
008	1	1	1	2	Laborer--motor vehicle equipment	13	5	4	2	3	2
009	1	2	1	2	Roofer	15	6	5	4	4	4
010	1	1	2	2	Boat builder	2	3	5	4	5	4
011	1	1	2	2	Locomotive fireman	45	2	4	4	3	4
012	1	1	1	2	Laborer--motor vehicle equipment	13	3	4	5	3	4
013	1	4	2	4	Chemist	79	7	7	8	6	7
014	1	1	2	3	Carpenter	19	1	6	5	6	5
015	1	3	2	3	Sheet metal worker	33	8	6	9	5	9
016	1	1	1	2	Tile setter	27	1	4	3	3	2
017	1	4	2	4	Farm foreman	20	1	4	3	3	2
018	1	3	2	3	Brickmason	27	5	5	5	4	5
019	1	1	2	2	Draftsman	67	1	6	6	6	6
020	1	2	2	2	Carpenter	19	1	6	9	6	8
021	1	2	2	2	Brickmason	27	5	6	7	6	7
022	1	1	1	2	Manager--retail trade	56	2	9	9	8	9
023	1	6	2	8	Telephone serviceman	49	1	5	6	5	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
024	1	4	2	4	Routeman	32	7	6	6	5	6
025	1	3	1	3	Counter worker	17	3	4	4	4	3
026	1	2	2	3	Truck driver	15	2	4	4	3	3
027	1	3	2	3	Truck driver	15	3	3	3	2	3
028	1	3	1	4	Machinist	33	1	3	4	2	3
029	1	3	2	4	Gardener	11	1	5	4	4	4
030	1	6	1	8	Laborer--repair service	9	1	5	5	4	4
031	1	4	2	5	Airplane mechanic	48	3	5	5	4	5
032	1	1	2	5	Lawyer	93	1	9	7	9	6
033	1	4	1	4	Electrician	44	1	6	6	6	5
034	1	1	1	2	Carpenter	19	1	5	5	4	4
035	1	4	2	5	Mechanic--automobile	19	1	2	2	1	2
036	1	1	2	2	Insurance agent	66	3	5	7	4	6
037	1	3	2	3	Machinery operator	22	8	6	5	5	4
038	1	4	1	4	Medical technician	48	4	9	7	8	7
039	1	2	1	2	Machinery operator	22	2	5	5	4	4
040	1	1	1	2	Barber	17	1	6	6	5	6
041	1	3	2	3	Electrician	44	7	5	5	5	4
042	1	1	2	1	Manager--manufacturing	79	0	8	9	8	9
043	1	1	2	2	Office machine opperator	45	2	5	3	4	2
044	1	4	1	4	Laborer--metal industry	7	4	4	4	3	3
045	1	1	2	3	Electrician	44	2	5	4	4	4
046	2	1	1	2	Machine operator	22	3	5	6	4	5
047	2	1	1	2	Designer	73	2	6	5	5	5
048	2	3	1	4	Mechanic--automobile	19	1	3	4	1	3

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
049	2	1	1	3	Mail carrier	53	2	4	5	4	5
050	2	1	1	3	Laborer--motor vehicle equipment	13	2	4	2	3	1
051	2	3	1	3	Foreman--nondurable goods	53	2	5	5	4	4
052	2	2	1	2	Truck driver	15	5	5	4	4	4
053	2	1	1	3	Proprietor--automobile repair service	34	1	4	4	3	3
054	2	2	1	3	Proprietor--automobile repair service	34	1	3	2	2	2
055	2	5	1	5	Office machine repairman	36	1	1	2	1	1
056	2	5	1	5	Janitor	9	14	3	2	2	1
057	2	1	2	3	Technician	62	3	9	9	8	8
058	2	1	2	2	Machine operator	22	2	6	5	5	4
059	2	1	2	4	Receiving clerk	22	2	3	4	2	4
060	2	2	2	2	Manufacturing foreman	53	2	3	4	2	3
061	2	2	2	2	Repairman	25	9	4	5	4	4
062	2	10	2	10	Fireman	37	2	3	3	2	2
063	2	1	2	3	Manufacturing foreman	53	1	5	5	4	5
064	2	2	1	4	Manager--manufacturing	53	1	5	5	4	5
065	2	3	1	3	Grinder--metal	22	5	5	6	4	5
066	2	2	1	3	Barber	17	2	5	4	4	3
067	2	1	1	2	Mechanic	25	3	6	7	5	7
068	2	5	1	5	Machine operator	22	2	3	1	2	1
069	2	4	1	4	Purchasing agent	77	3	6	6	6	5
070	2	2	2	2	Machinist	33	20	9	9	9	8

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
071	2	2	2	2	Office machine operator	45	3	5	4	4	4
072	2	2	2	2	Barber	17	3	5	5	4	5
073	2	3	2	4	Repairman	25	2	6	7	6	7
074	2	2	2	2	Laborer--manufacturer	8	2	6	7	6	7
075	2	3	2	3	Truck driver	15	8	6	6	5	5
076	2	1	2	5	Truck driver	15	1	5	3	4	3
077	2	3	2	3	Bank teller	52	2	7	6	6	6
078	2	2	2	2	Printer	49	5	3	3	2	2
079	2	4	2	5	Molder--metal	12	1	5	6	4	5
080	2	2	2	2	Machine operator	22	3	7	5	7	5
081	2	4	2	5	Mail carrier	53	1	5	5	4	5
082	2	4	2	5	Truck driver	15	1	4	4	3	3
083	2	1	1	2	Manager--auto repair service	47	2	9	9	9	8
084	2	5	1	6	Laborer--metal industry	7	2	3	1	2	1
085	2	1	1	1	Manager--manufacturing company	79	0	5	6	4	5
086	2	4	1	5	Self-employed--personal service	41	2	4	3	3	3
087	2	4	1	4	Truck driver	15	4	4	3	3	2
088	2	3	1	3	Technician	62	1	9	7	9	7
089	2	1	1	3	Bookkeeper	51	2	6	5	5	5
090	2	1	2	3	Mechanic	25	3	6	7	6	7
091	2	3	2	3	Electrician	44	3	5	6	4	6
092	2	4	2	5	Shipping clerk	22	2	7	6	6	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
093	2	1	2	5	Truck driver	15	1	5	5	4	4
094	2	3	2	3	Draftsman	67	4	5	5	4	5
095	2	2	2	3	Photographer	50	1	5	6	4	6
096	2	1	2	2	Sheet metal worker	33	1	6	6	6	6
097	2	5	2	5	Shipping clerk	22	13	6	6	6	6
098	2	2	2	3	Ticket agent	60	2	6	5	5	4
099	2	6	2	7	Truck driver	15	1	4	4	3	3
100	2	2	2	2	Machine operator	22	2	6	6	5	5
101	2	2	1	3	Truck driver	15	3	7	8	7	8
102	2	1	1	3	Truck driver	15	2	8	6	8	6
103	2	2	2	3	Bookkeeper	51	1	6	4	5	3
104	2	2	1	3	Receiving clerk	22	1	2	4	1	4
105	2	2	1	3	Machinist	33	3	6	5	5	4
106	2	2	1	2	Machinist	33	3	7	9	7	9
107	2	2	2	2	Testing technician	53	2	7	7	7	7
108	2	2	2	3	Welder	24	2	5	5	4	5
109	2	6	2	6	Janitor	9	1	3	3	2	2
110	2	2	2	3	Machinist	33	2	7	7	6	7
111	2	1	2	4	Foreman--manufacturing	53	2	6	5	6	4
112	2	1	2	2	Technician	62	3	9	9	9	9
113	2	4	2	5	Pressman	49	1	6	6	5	6
114	2	1	2	2	Television repairman	36	3	6	6	6	6
115	2	1	2	2	Electrician	44	3	6	6	6	5
116	2	4	2	4	Machinist	33	8	8	9	8	9
117	2	2	2	2	Truck driver	15	2	6	5	6	5

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
118	2	3	2	3	Engineer	85	8	9	9	9	9
119	2	4	1	4	Machinist	33	3	4	3	3	3
120	2	2	1	2	Laborer--manufacturing	8	2	6	6	5	5
121	2	2	1	2	Truck driver	15	7	3	3	2	2
122	2	1	1	1	Detective--government	40	0	5	6	4	6
123	2	2	1	2	Manager--retail	56	1	7	6	6	6
124	2	2	1	3	Laborer--paper products	7	2	5	7	4	7
125	2	3	1	3	Mechanic	25	1	4	5	4	4
126	2	4	1	8	Shipping clerk	22	2	3	3	2	2
127	2	2	1	2	Maintenance	16	4	6	6	5	5
128	2	3	1	4	Truck driver	15	3	6	5	5	5
129	2	5	1	5	Secretary	61	1	7	7	6	7
130	2	3	1	2	Manager--telecommunication	76	2	5	5	4	4
131	2	6	1	6	Laborer--manufacturing	8	5	8	8	8	8
132	2	5	2	5	Truck driver	15	1	4	6	4	5
133	2	3	2	4	Machinist	33	2	3	3	1	2
134	2	2	2	2	Truck driver	15	2	6	6	6	6
135	2	1	2	3	Foreman--manufacturing	53	2	4	4	3	3
136	2	3	2	3	Tool and die maker	50	2	5	5	4	4
137	2	2	2	4	Machine operator	22	7	4	4	3	3
138	2	4	2	4	Machinist	33	2	9	9	8	8
139	3	3	1	3	Manager--manufacturing	61	4	6	5	6	5
140	3	2	1	2	Clergyman	52	2	7	6	7	6
141	3	1	1	2	Shipping clerk	22	2	6	8	6	7
142	3	1	1	2	Salesman--manufacturing	65	2	7	6	6	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
143	3	1	1	2	College professor	84	4	8	8	8	8
144	3	3	1	3	Machinist	33	7	6	6	6	6
145	3	1	1	2	Foreman--manufacturing	53	2	6	5	5	5
146	3	3	1	3	Tool and die maker	50	3	5	6	5	5
147	3	2	1	2	Auditor	78	3	7	6	7	6
148	3	1	2	1	Paperhanger	10	0	6	5	6	4
149	3	2	2	3	Official--self-employed--business services	67	4	9	9	8	9
150	3	1	2	2	Shipping clerk	22	2	5	5	4	4
151	3	1	2	2	Salesman	47	4	6	7	6	6
152	3	4	2	5	Attorney	93	2	9	8	8	7
153	3	2	2	3	Salesman--wholesale	61	2	6	7	6	6
154	3	2	2	2	Manager--manufacturing	61	3	4	4	3	4
155	3	2	2	3	Manager--manufacturing	79	9	6	6	5	6
156	3	2	1	2	Plasterer	25	2	9	6	8	6
157	3	1	1	3	Accountant	78	2	5	4	4	4
158	3	3	1	3	Bookkeeper	51	4	6	5	5	5
159	3	1	1	3	Brickmason	27	2	7	7	6	7
160	3	1	1	1	Brickmason	27	0	7	6	7	6
161	3	1	1	2	Store department head	72	2	5	2	4	2
162	3	3	1	3	Pharmacist	82	2	6	8	6	7
163	3	1	1	2	Mechanic--automobile	19	1	7	5	6	4
164	3	6	1	6	Armed Forces	18	2	8	8	8	8
165	3	3	2	5	Restaurant manager	39	2	5	4	4	4
166	3	3	2	3	Foreman--manufacturing	53	6	8	6	8	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
167	3	2	2	2	Baker	22	2	9	9	9	9
168	3	1	2	2	Electrician	44	3	3	1	2	1
169	3	5	2	5	Draftsman	67	2	4	2	3	2
170	3	1	2	3	Chemist	79	2	7	8	7	7
171	3	1	2	1	Real estate broker	62	0	8	6	8	5
172	3	3	2	3	Foreman--manufacturing	53	6	6	5	6	4
173	3	2	1	3	Foreman--manufacturing	53	6	[illegible]	5	6	4
174	3	2	1	2	Receiving clerk	22	2	2	2	1	2
175	3	5	1	6	Manager--manufacturing	79	4	3	5	2	5
176	3	1	1	3	Laborer--chemical product	8	1	3	4	2	3
177	3	3	1	3	Steamfitter	34	2	7	9	6	8
178	3	1	1	1	Manager--telecommunications	76	0	7	6	6	6
179	3	2	1	3	Manager--general merchandise	47	3	6	5	5	4
180	3	1	2	2	Manager--manufacturing	61	4	5	3	4	2
181	3	4	2	5	Routeman	32	2	5	5	5	4
182	3	1	2	1	Electrician	44	0	9	8	9	8
183	3	1	2	2	Industrial engineer	86	3	9	8	8	8
184	3	2	2	2	Teacher	72	2	6	5	6	5
185	3	3	2	3	Manager--telecommunications	70	4	9	9	9	9
186	3	1	2	2	Tool and die maker	50	2	5	4	5	4
187	3	3	2	3	Salesman--retail	39	2	5	4	4	4
188	3	3	2	3	Industrial salesman	50	2	5	5	4	4
189	3	1	2	1	Repairman--automobile	19	0	4	3	3	3
190	3	1	2	2	Proprietor--general merchandise	47	1	6	6	6	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
191	4	1	2	2	Machinist	33	1	5	4	4	3
192	4	2	2	2	Official--wholesale trade	70	3	4	3	4	2
193	4	1	1	2	Bank teller	52	2	5	4	5	3
194	4	2	2	3	Magazine editor	82	2	6	7	5	7
195	4	3	2	3	Salesman--retail	39	4	5	3	4	2
196	4	4	1	4	Accountant	78	2	6	7	5	7
197	4	3	2	4	Detective--government	40	2	4	4	3	3
198	4	5	1	5	Self-employed--construction	51	1	7	9	7	8
199	4	12	1	15	Banking official	85	1	5	5	4	4
200	4	4	2	4	Office machine operator	31	2	6	7	6	7
201	4	2	2	2	Sheet metal worker	33	4	6	6	5	6
202	4	3	1	3	Tool and die maker	50	1	8	6	8	6
203	4	3	2	3	Official--retail trade	56	1	6	5	5	4
204	4	1	2	1	Industrial engineer	86	3	7	7	6	7
205	4	2	2	2	Stevedore	11	4	5	5	5	5
206	4	1	1	2	Self-employed--repair service	34	1	5	5	4	4
207	4	3	2	3	Beautician	17	1	5	5	4	4
208	4	3	2	3	Pharmacist	82	2	6	5	6	5
209	4	1	1	3	Manager--manufacturing	79	4	6	7	5	6
210	4	2	2	3	Self-employed--personal service	41	1	6	5	5	4
211	4	2	1	2	Real estate agent	62	2	7	6	6	6
212	4	2	1	2	Self-employed--personal service	41	4	8	6	8	6

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
213	4	2	1	2	Salesman--manufacturing	65	3	9	9	9	9
214	4	5	2	5	Self-employed--trucking prop.	43	9	4	5	4	4
215	4	2	1	4	Teacher	72	2	6	5	5	5
216	4	3	2	3	Teacher	72	4	5	4	4	3
217	4	3	1	3	Salesman--manufacturing	65	7	6	6	5	6
218	4	2	1	3	Insurance agent	66	3	6	5	5	5
219	4	2	1	2	Industrial salesman	50	6	5	4	4	4
220	4	1	2	2	Technician	62	4	5	6	4	5
221	4	1	2	2	Service station owner	33	5	5	6	5	6
222	4	1	1	3	Self-employed--personal service	41	1	5	5	4	4
223	4	2	1	2	Polisher--metal	22	8	5	6	5	5
224	4	1	2	1	Construction	16	0	6	5	6	4
225	4	3	2	3	Proprietor--apparel store	65	1	9	7	8	7
226	4	1	1	2	Barber	17	4	4	4	3	4
227	4	2	1	4	Attorney	93	1	6	5	6	5
228	4	1	1	3	Mechanic	25	2	4	5	3	4
229	4	1	1	2	Tool and die maker	50	2	5	6	4	6
230	4	2	2	5	Electrician	44	2	7	7	7	7
231	4	3	1	3	Civil engineer	84	3	4	5	3	4
232	4	1	1	4	Foreman--telecommunications	56	4	7	6	7	5
233	4	3	2	3	Chemist	79	1	6	6	6	6
234	4	3	1	4	Television repairman	36	4	8	9	8	9
235	4	1	1	2	Teacher	72	3	9	9	9	8
236	4	1	1	3	Salesman--retail	39	1	5	5	5	5

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
237	4	1	2	3	Credit manager	74	3	8	8	8	8
238	4	2	1	3	Beautician	17	1	4	2	3	1
239	4	1	2	4	Physician	92	1	7	6	7	6
240	4	4	1	5	Chemist	79	2	5	6	4	5
241	4	2	1	2	Salesman--wholesale	61	2	7	7	7	6
242	4	2	1	2	Insulation worker	32	12	5	4	4	3
243	4	2	1	2	Proprietor, salaried--construction	60	2	6	7	6	7
244	4	3	1	3	Pressman	49	3	4	5	3	4
245	4	2	1	2	Manager--manufacturing	79	9	6	4	6	4
246	4	1	1	2	Machine operator	22	1	3	4	1	4
247	4	3	1	3	Foreman--manufacturing	53	1	5	5	4	4
248	4	2	2	2	Office machine operator	45	2	5	6	5	6
249	4	6	1	6	Inspector--public utility	45	4	6	8	5	7
250	4	2	2	2	Policeman	39	4	3	4	2	3
251	4	2	1	2	Manager--retail	56	2	5	4	4	3
252	4	3	2	4	Foreman--manufacturing	53	2	3	3	2	2
253	4	2	2	2	Routeman	32	2	4	5	3	5
254	4	2	1	3	Salesman--wholesale	61	1	7	6	6	5
255	4	1	1	1	Chemist	79	0	5	5	5	5
256	4	1	2	2	Salesman--manufacturing	65	2	7	8	6	7
257	4	3	1	3	Technician	62	2	6	5	5	4
258	4	2	1	2	Salesman--manufacturing	65	2	1	2	1	1
259	4	1	1	2	Pharmacist	82	1	9	8	9	9
260	4	2	2	3	Purchasing agent	77	1	7	9	6	9

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
261	4	3	2	3	Baggageman	25	12	4	4	4	4
262	4	2	1	3	Physician	92	2	7	6	6	5
263	4	1	2	3	Mail carrier	53	1	5	4	4	3
264	4	3	1	4	Laborer--confectionery products	10	2	4	2	3	2
265	4	2	1	3	Chemist	79	2	7	6	6	6
266	4	1	1	2	Manager--retail	56	1	5	1	4	1
267	4	2	2	2	Purchasing agent	77	2	8	6	8	6
268	4	3	1	3	Salesman--wholesale	61	3	7	6	7	6
269	4	3	1	3	Attorney	93	2	3	5	2	4
270	4	3	1	3	Bookkeeper	51	2	6	6	5	5
271	4	2	2	3	Industrial engineer	86	1	9	7	8	7
272	4	1	1	2	Optician	39	2	8	8	8	8
273	4	1	1	1	Manager--telecommunications	76	0	8	9	8	9
274	4	3	2	3	Stevedore	11	4	3	3	2	2
275	4	2	1	2	Mechanic--automobile	19	3	4	1	3	1
276	4	2	2	2	Manager--manufacturing	79	1	7	8	7	7
277	4	1	2	2	Truck driver	15	3	6	6	5	6
278	4	3	2	3	Operative--synthetic fibers	9	6	6	5	5	5
279	4	3	2	3	Manager--transportation	71	6	6	5	6	5
280	4	1	1	1	Chemist	79	0	8	8	8	8
281	4	1	2	2	Chemist	79	4	6	6	5	6
282	4	2	2	2	Proprietor--eating place	37	2	5	5	5	5
283	4	4	1	4	Manager--manufacturing	79	3	4	4	4	3
284	4	4	1	5	Chemical engineer	90	1	4	5	3	4

BACKGROUND DATA ON SUBJECTS--Continued

Subject Number	School	Order of Birth	Sex (M=1, F=2)	Family Size	Occupation	Occupational Index	Sibling Span	National Vocabulary Stanine	National Comprehension Stanine	Local Vocabulary Stanine	Local Comprehension Stanine
285	4	1	2	2	Foreman--metal industry	54	2	4	2	3	1
286	4	2	1	2	Manager, motor accessory--retail	70	2	6	7	6	7

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Professional Experience

1962-1963 Teacher, Grade 5
Benjamin Franklin School
Edison, New Jersey

1963-1964 Teacher, Grade 5
Larchmont School
Norfolk, Virginia

1973-Present Title I Teacher, Reading and Language Experience, Grades K-3
Lincoln School
Edison, New Jersey

COURSE WORK FOR MASTER'S DEGREE IN READING

		Instructor
Summer, 1972		
15:290:501	Introduction to Educational Tests and Measurements	Dr. Pascale
Fall, 1972		
15:299:561	Foundations of Reading Instruction	Dr. Kling
15:290:540	Introduction to Learning	Dr. Montare Dr. Gillooly Dr. Cox
Spring, 1973		
15:299:564	Remedial Reading	Dr. Goldsmith
15:299:565	Lab in Remedial Reading	Dr. Mooney
Summer, 1973		
17:610:521	Reading Materials for Children	Mrs. Cramer
Fall, 1973		
15:290:513	Introduction to Early and Middle Childhood	Dr. Arnold
Spring, 1974		
15:299:518	Psychology of Personality	Dr. Schacter
Fall, 1974		
Kean College	Teaching of Reading for Teachers of Special Classes	Dr. Putnam
Spring, 1975		
15:299:566	Seminar in Reading Research and Supervision	Dr. Kling
Fall, 1975		
15:299:599	Thesis Research	Dr. Kling

Spring, 1976		Instructor
15:250:590	The Urban Student	Dr. Yeakey